

WE CLAIM AS OUR INVENTION:

1. A method for adapting a hearing aid to user-dependent conditions, comprising the steps of:

providing a hearing aid device to be worn at an ear of a user, having a microphone arrangement with a directional characteristic comprising a plurality of microphones with filters respectively connected downstream therefrom, said filters being parameterizable in terms of amplitude response and phase response, and a signal processing stage and an earphone;

while said user is wearing said hearing aid, exposing said hearing aid to acoustic waves from different directions to produce incoming acoustic signals to said microphones, said microphones converting said incoming acoustic signals into electrical signals;

providing a measuring and evaluation unit externally from said hearing aid and supplying said electrical signals to said external measuring and evaluation unit;

in said measuring and evaluation unit, calculating filter parameters from said electrical signals; and

supplying said filter parameters from said measuring and evaluation unit to said filters in said hearing aid for setting at least one of said amplitude response and said phase response in each of said filters to optimize said directional characteristic.

2. A method as claimed in claim 1 wherein the step of exposing said hearing aid to acoustic waves from different directions comprises successively exposing said hearing aid to acoustic waves from respectively different directions in a sequence, and wherein the step of calculating said filter parameters comprises calculating said filter parameters in said measuring and evaluation unit after said sequence.

3. A method as claimed in claim 1 wherein the step of exposing said hearing aid to acoustic waves from different directions comprises successively exposing said hearing aid to acoustic waves from respectively different directions in a plurality of sequence, and wherein the step of calculating said filter parameters comprises calculating said filter parameters in said measuring and evaluation unit after each sequence.

4. A method as claimed in claim 1 wherein the step of exposing said hearing aid to acoustic waves from different directions comprises successively exposing said hearing aid to acoustic waves from respectively different directions in a plurality of sequence, and wherein the step of calculating said filter parameters comprises calculating said filter parameters in said measuring and evaluation unit after a prescribed number of said sequences.

5. A method as claimed in claim 1 wherein the step of exposing said hearing aid to acoustic waves from different directions comprises simultaneously exposing said hearing aid to acoustic waves from said different directions.

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6. A hearing aid arrangement comprising:

a hearing aid having a directional characteristic, with a plurality of microphones and respective filters connected downstream from said microphones, a signal processor and an earphone, said filters being parameterizable with regard to amplitude response and phase response;

a measuring and evaluation unit disposed externally from said hearing aid and in communication at least with outputs from said microphones in said hearing aid and with said filters in said hearing aid, said measuring and evaluation unit receiving electrical signals from said microphones corresponding to acoustic signals received from different directions by said microphones while said hearing aid is being worn by a user, and said evaluation and measuring unit calculating filter parameters from said electrical signals and supplying said filter parameters to said filters in said hearing aid for adjusting at least one of said amplitude response and said phase response of said filters.

7. A hearing aid arrangement as claimed in claim 6 wherein each of said filters is a filter wherein said amplitude response and said phase response are independently adjustable.

8. A hearing aid arrangement as claimed in claim 7 wherein each of said filters is an FIR filter.

9. A hearing aid arrangement as claimed in claim 6 wherein said hearing aid further comprises a memory in which a plurality of different sets of filter parameters, calculated in said measuring and evaluation unit and supplied to said memory, are stored.

10. A hearing aid arrangement as claimed in claim 9 wherein said measuring and evaluation unit calculates said different sets of filter parameters respectively for different directional characteristics.